a total loss, as much of it was saved and afterwards dried so as to be used.

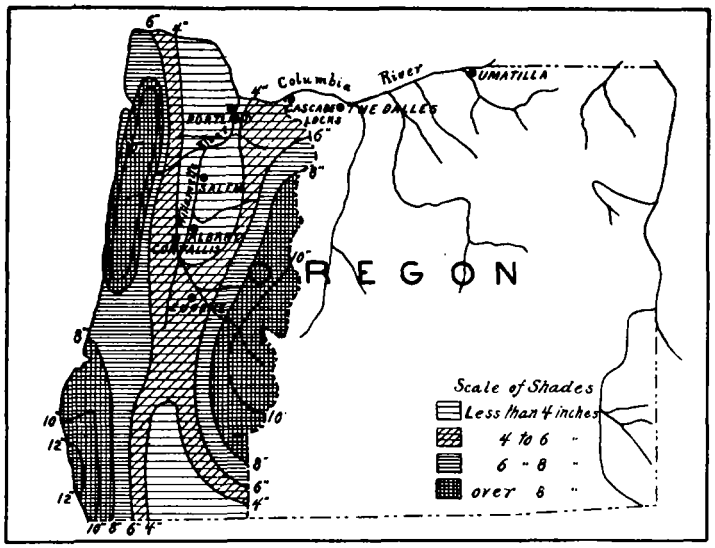

FIG. 1.—Precipitation in western Oregon from February 1 to 6, 1907, inclusive.

The same general rains also caused flood stages thruout the upper Sacramento Valley, but nothing of a serious nature developed.

The Missouri River opened at Omaha, Nebr., on the 18th, but remained generally frozen above. There were ice gorges at times above Sioux City, Iowa, especially from Vermillion, S. Dak., southward, and about 100 square miles of farm lands were inundated. There was no change in the upper Mississippi River, and it remained frozen as far south as Leclaire, Iowa. The upper Allegheny River was frozen during the

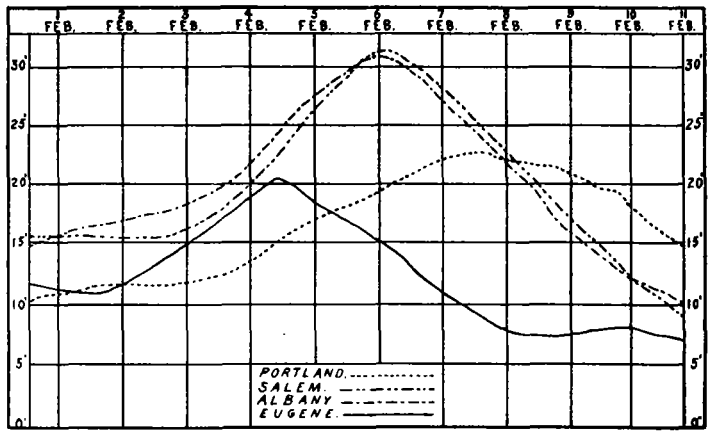

FIG. 2.—Hydrographs for four stations on the Willamette River, February 1 to 11, 1907.

greater portion of the month, as were also portions of the Scioto and Sandusky rivers of Ohio. The rivers of New England and the Middle Atlantic States continued closed thruout the month.

There was considerable ice in the Columbia River about the time of the Willamette flood, and navigation was greatly interrupted, and at times suspended.

The highest and lowest water, mean stage, and monthly range at 300 river stations are given in Table VI. Hydrographs for typical points on seven principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississipi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Professor of Meteorology.*

NORTH ATLANTIC WEATHER.

By Mr. JAMES PAGE, Chief of the Division of Ocean Meteorology.

[Compiled from the daily observations, at Greenwich mean noon, furnished by cooperating observers at sea.]

The Greenwich mean noon synoptic weather chart for February 1 shows two well-defined areas of high pressure covering the eastern half and the western half of the ocean, respectively; the former central in latitude 50° north, longitude 15° west, and exhibiting maximum barometric readings of 30.60 inches; the latter central over the Gulf of St. Lawrence, with maximum pressure of about the same intensity. The axis of the trough of low pressure separating these two highs extended from the parallel of 50° to the parallel of 34°, in an almost due north and south direction along the meridian of 37° west. On the eastern slope of this trough southerly gales of force 8 and 9 prevailed, the belt of high winds extending in width eastward to the meridian of 29° west. On the western slope, northerly and northwesterly gales extended as far as 50° west. The shift of the winds experienced by westward bound vessels crossing the line of minimum pressure was in all cases almost instantaneous.

Thruout the day this distribution moved slightly to the eastward, its principal features remaining intact. At Greenwich mean noon of February 2 the trough of low pressure was roughly coincident with the meridian of 28° west. In the rear of the American high, pressure gave way rapidly, a wedge-shaped prolongation of a cyclonic area central over the Great Lakes suddenly extending eastward across the New England coast, giving rise to southeasterly gales along the transatlantic routes as far eastward as longitude 55°. Thruout February 3 and 4 this cyclonic area was stationary over the Gulf of St. Lawrence and Newfoundland. During February 5 pressure in this region underwent a marked increase, coincident with the appearance of a decided local depression off the coast of New Jersey. The latter, altho accompanied by cyclonic winds of force 10 and 11, was of brief duration, no evidence of its existence being apparent upon the chart of February 6.

Moderate weather prevailed over the entire ocean February 7 and 8.

On February 9 a marked area of low pressure developed to the northward of Bermuda, and moving eastward gave rise to the most severe storm experienced during the month. On the 10th the position of the center (minimum pressure 28.90 inches) was latitude 43° north, longitude 52° west, the center being surrounded by a completely developed system of cyclonic winds of full hurricane force. The course of the depression was about east-northeast; it was attended thruout by violent gales in its southern and western quadrants, and finally crost the British Isles February 12.

Moderate weather was continuous from February 14 to 22, the salient feature of the pressure distribution thruout this interval being a strengthening of the high over the Azores, the pressure thereabouts ranging from 30.40 to 30.60 inches. Thruout the same period Newfoundland was covered by the characteristic low area, and on several days the gradients became of sufficient steepness to occasion winds of gale force thruout the intervening region, the area affected being in general limited by the parallels 40°–45° north, and the meridians 40°–55° west.

On the 18th of the month pressure over Iceland fell below 28.60 inches, accompanied by hurricane winds along the

steamship route north about Scotland. On the date named the British steamship *Lucerna*, Tyne to Philadelphia, latitude 58° 30′ north, longitude 14° 30′ west, reported a barometric reading of 28.09 inches, attended by a hurricane from the west and terrific seas. On the 19th and 20th these westerly gales swept the coast of Ireland and extended over the United Kingdom. Pressure over the Azores gave way February 22, and remained below the average until February 27. Thruout this interval, as usual, a well-marked anticyclonic area covered the British Isles, extending westward to the mid-Atlantic. Pressure over the American coast was high February 23 and 24, which, coupled with the low to the eastward, occasioned fresh north and north-northeasterly gales along the New York–West Indian route. On the 25th a decided diminution occurred, the barometer at Quebec falling from 30.72 inches to 29.66 inches in twenty-four hours. The winds over the ocean to the westward of 60° underwent a corresponding shift from north and northeast to south and southwest. The center of the low moved rapidly eastward, and on the 26th westerly gales covered the transatlantic routes from Sable Island to 45° west, extending as far southward as the thirty-fifth parallel. The system then moved northward, and these gales were not felt east of the thirty-fifth meridian. February 28 showed a resumption of anticyclonic conditions over the American coast, with resulting strong northwesterly winds thruout the region to the southward of Newfoundland.

SPECIAL ARTICLES, NOTES, AND EXTRACTS.

NOTES OF A METEOROLOGIST IN EUROPE.

By H. J. COX, Professor of Meteorology. Dated Chicago, Ill., March 22, 1907.

An account of my trip abroad, in which I visited several of the meteorological offices in Europe, may be interesting to readers of the REVIEW, and, at the request of the Editor, I have prepared a summary. I have also included in the report my impressions of the weather experienced on the trip.

Whether traveling on business or pleasure, a "weather man" finds it difficult to entirely separate himself from his profession, and so it was with me on my voyage across the Atlantic. While on the ocean, I followed the readings of the barometer from day to day, noted the condition of the weather, the effect of the wind upon the sea, and indirectly upon the large ship on which I was sailing.

It had been my impression that on an eastward voyage storms were less likely than when bound westward; and that, if one left the American side in a period of fair weather, he was likely to have settled conditions all the way across; assuming, of course, that the storms move across the ocean with the same general direction and velocity as the ship. Yet during my passage of seven days storms occurred in rapid succession. The ship left New York on the morning of December 1, 1906, with partly cloudy weather and nearly normal barometer prevailing. During the next forty-eight hours the barometer fell steadily, reaching a minimum of 29.53 inches on the morning of December 3. High winds and rain prevailed on both the 2d and 3d, the rain on the 3d turning to snowsqualls, with winds shifting from southerly to northwest and followed by rising barometer and fair weather in the afternoon. The ship's weather report noted the conditions as "fresh gale and tempestuous sea". December 4 was again showery, with increasing winds from the east, and falling barometer. The ship's report again noted the conditions as "fresh gale and tempestuous sea". December 5 was showery with rising barometer and high northwest winds. The ship's report stated "moderate gale, rough sea". The barometer rose rapidly during the night of the 5-6th, reaching a maximum of 30.5 inches. Fresh southeast winds prevailed with cloudy weather and smooth sea during December 6. On the following day, December 7, the barometer, altho high, began to fall and showers prevailed. It became clear in the evening, however, and Daunt Rock Light, on the southwest coast of Ireland, was plainly visible late at night, the first indication of approaching land. When we reached the Cove of Cork, Queenstown Harbor, at 3 o'clock in the morning of December 8, and lay to for an hour in order to land some passengers and mail, it was dark and gloomy, and the faint outlines of the shores of Ireland, about half a mile distant, could barely be discerned. Later in the day during our passage northeastward to Liverpool thru St. Georges Channel and the Irish Sea, variable winds prevailed, and a partly overcast sky. The shore of Ireland could at no time be seen very clearly, but the mountains of Wales in the afternoon loomed up with great distinctness on the right. It was dark when we reached the Mersey, and raining hard by the time the train for London pulled out of the Liverpool station at 8 p. m., but on my arrival in London at midnight the sky was entirely clear. A pleasant surprise awaited me in the shape of good weather in London during a stay of three and one-half days. The first two days were clear and cold with a minimum temperature below the freezing point; while on the third day—December 11—there was increasing haze, smoke, and fog, and by the afternoon the atmosphere was quite thick, objects being distinguishable but a short distance. It was, in fact, the well-known London fog, but in very weak form. Londoners told me it was "a mere nothing" as compared with what they often have. I was naturally interested in this condition, and desired to draw some comparison between it and the smoky weather which often prevails in Chicago, but there did not seem to be much similarity between the conditions. The atmosphere had a peculiar yellowish color, the haze or fog being apparently quite general, and it was so dense at 3 p. m., when I stood on London Bridge, that I could not see the Tower, about 600 feet distant. On the night of December 11 heavy rain set in, but by the following morning it was quite clear again.

I had a very pleasant visit to the meteorological office on Victoria street on December 10, meeting Dr. W. N. Shaw, the director, and several members of his scientific staff. The observatory in London is in St. James Park, there being no meteorological station at the central bureau. I learned from Doctor Shaw that the service is not considered distinctly governmental, as it receives its support by what is called the *Grant in Aid*. It is true, however, that it has no other funds at its disposal, except a few hundred pounds per year which it receives from the sale of the forecasts and weather maps. The price of the telegraphic forecast is one shilling and the cost of transmission. The price of the weather map is one pound per annum or one penny per day. Public and educational institutions are provided with these free of expense, as well as the newspapers, but the latter are required to send by messenger for the forecasts each morning, and the forecasts are not telephoned to anyone. The night forecast is published in the morning papers for the ensuing day. The meteorological service of Great Britain is not able to secure precedence of its messages over the telegraph wires, the post-office department refusing to recognize it as other than a private service. In fact, the director states that if a message containing a bet on a horse race were filed at the same time or even a little later than a storm-warning message the former would be likely to be sent first. This want of recognition hampers the service considerably, but the British boast that they are exceedingly democratic, and they feel that no precedence should be granted by the government telegraph lines except to messages solely concerning the affairs of state.

The observations are taken at 8 a. m., Greenwich time, in the British Isles and in France, and at 7 a. m. in other conti-